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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/731,395	12/04/2000	Peter Schmiedel	H 4318	9268

7590 07/28/2004

Glenn E.J. Murphy
Henkel Corporation, Patent Law Dept.
2500 Renaissance Blvd., Suite 200
Gulph Mills, PA 19406

EXAMINER	
KUMAR, PREETI	

ART UNIT	PAPER NUMBER
1751	

DATE MAILED: 07/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/731,395	SCHMIEDEL ET AL.	
	Examiner	Art Unit	
	Preeti Kumar	1751	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 February 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,5-18,21 and 23-36* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3, 5-18, 21 and 23-36* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *04/2/01*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Final Rejection

Response to Amendment

1. Claims 1-3, 5-18, 21 and 23-36 are pending. Claims 4,19-20,22 are cancelled.

2. The rejection of claims 3, 7, and 11 under 35 U.S.C. 112, second paragraph is withdrawn.

3. The rejection of claims 1-3, 5-21 and 23-36 rejected under 35 U.S.C. 102(b) as being anticipated by Langley et al. (US 5,492,646) is withdrawn in light of applicant's amendment to the claims.

4. The rejection of claims 1-3, 5-21 and 23-35 rejected under 35 U.S.C. 102(e) as being anticipated by Van Vilsteren et al. (US 6,290,988) is withdrawn in light of applicant's amendment to the claims.

5. The rejection of claim 36 rejected under 35 U.S.C. 103(a) as being unpatentable over Van Vilsteren et al. (US 6,290,988) as applied to claims 1-3, 5-18, 21 and 23-35 above is maintained for the reasons recited in the previous office action.

Response to Arguments

6. Applicant's arguments filed February 2, 2004 have been fully considered but they are not persuasive.

Applicants urge that the prior art do not teach or suggest particle sizes of 0.1mm to 35 mm. Contrary to Applicant's arguments, Langley et al. (US 5,492,646) and Van Vilsteren et al. (US 6,290,988) suggest a wide range of particle sizes that are encompassed by the range recited by the newly amended claims. See the new

grounds of rejection below and Langley et al. col.10, ln.16-20 and col.7, ln.8 and Van Vilsteren et al. col.4, ln.56.

New Grounds of Rejection

Claim Objections

7. Claim 27 is objected to because of the following informalities: The word "compriing" is misspelled. Appropriate correction is required.

Claim Rejections - 35 USC § 103

8. Claims 1-3, 5-18, 21 and 23-36 are rejected under 35 U.S.C. 103(a) as obvious over Langley et al. (US 5,492,646).

Langley et al. teach the encapsulation of an active ingredient within a polymeric material so as to protect the active ingredient from the ambient environment, for instance atmospheric moisture when the product is exposed to the air, or the liquid phase of a liquid detergent when the product is incorporated in such a detergent. A dispersion in oil of an aqueous solution of a matrix polymeric material containing enzyme or other active ingredient is subjected to distillation to provide a substantially anhydrous dispersion in oil of particles of matrix polymer containing active ingredient, and during or after the distillation the polymer solution is converted into a solid polymer. In the invention, we use a matrix polymer that is so hydrophobic that it partitions preferentially into the oil rather than into the aqueous solution of encapsulating polymer. Because the aqueous solution is incompatible with both the hydrophobic oil and the matrix polymer, there is increased tendency for the encapsulating shell to be formed around a layer of oil, rather than in direct contact with a matrix polymer particle. See

abstract. Langley et al. teach converting the matrix polymer to solid form by selecting a hydrophobic polymer from the class known as "low critical solution temperature" (LCST) polymers. The process by which these can be used for the matrix is substantially the same as the process by which they can be used for forming the encapsulating shell. In brief, a characteristic of such polymers is that they can be insolubilized by heating to a critical temperature (for instance as can happen during the distillation stage) and a depressant for the temperature of insolubilization (for instance a water miscible non-solvent or an electrolyte) can be added to stabilize the solid form at a lower temperature. See col.4, ln.55-65.

Langley et al. teach that the LCST polymer can be a naturally occurring polymer such as certain cellulose derivatives, such as the methyl, hydroxy propyl, and mixed methyl/hydroxy propyl cellulose ethers. Suitable LCST monomers include N-alkylacrylamide, N,N-dialkylacrylamide, diacetone acrylamide, N-acryloylpyrrolidine, vinyl acetate, certain (meth) acrylate esters (especially hydroxypropyl esters), styrene, and various other vinyl monomers, especially N-vinylimidazoline and the like.
When the LCST polymer is a copolymer, the comonomer is usually hydrophilic and can be non-ionic or ionic. Suitable non-ionic monomers include acrylamide, hydroxyethyl acrylate, vinyl pyrollidone, or hydrolysed vinyl acetate. Anionic or cationic monomer can be used in place of or in addition to the non-ionic comonomer to form a copolymer or terpolymer with the LCST monomer respectively. Suitable anionic monomers include ethylenically unsaturated carboxylic or sulphonic acid monomers, for example (meth) acrylic acid and alkaline salts thereof, and 2-acrylamido methyl propane sulphonic acid.

Suitable cationic monomers include dialkylaminoalkyl (meth)acrylates and acrylamides as acid addition or quaternary ammonium salts, for example dialkylaminoethyl (meth)acrylate acid addition salts. See col.8, 14-55.

Langley et al. teach that the temperature T1 of reversible insolubilization of the LCST polymer is the temperature at which the polymer will become insoluble if the solution containing the polymer is heated past T1 or will become soluble if insoluble polymer in that aqueous solution is cooled below that temperature. The temperature of reversible insolubilisation is generally reasonably abrupt, but may extend over a few degrees or more. Naturally T3 must be sufficiently low that any range for T1 does not significantly overlap the range for T3, which is the corresponding temperature for the polymer in the aqueous solution containing the TRI depressant. T1 is generally at least 25.degree. C. and often at least 30.degree. C. and frequently is in the range 45.degree. to 80.degree. C. but can be as high as 100.degree. C. T3 is generally at least 5.degree. C. lower than T1 and is preferably at least 10.degree. C. and often at least 20.degree. C. below T1. See col.9, ln.10-42.

Langley et al. teach that a wide variety of active ingredients can be encapsulated by the described technique including dyes (for pressure sensitive paper), agricultural chemicals, perfumes, flavors, condiments, essential oils, bath oils, bleaching agents, and enzymes. Suitable agricultural chemicals are water insoluble pesticides (e.g. herbicides and insecticides) that would otherwise need to be formulated as, for instance, an emulsifiable solution in oil. Langley et al. teach that the encapsulation of enzymes, and in particular detergent enzymes, are useful for inclusion in laundry or

other detergent compositions. When the particle size is small, e.g. below 20 um, the particulate composition is generally provided as a dispersion in the liquid medium, for instance a liquid detergent. When the particle size is larger, for instance above 50 um and especially above 100 um, the particles can be recovered as dry particles. See col.10, ln.5-22. In col.7, ln.8. Langley et al. provide suggestion to make larger particles upto 100um or 500um. In examples 2 and 4, Langley et al. illustrate the encapsulation of an active ingredient, Savinase enzyme compounded with an LCST polymer. See col.11 examples 2, 4.

Langley et al. do not specifically teach the active ingredient particle sizes of between 0.1mm and 35mm as recited by the instant claims.

However, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to arrive at a detergent composition having particle sizes of 0.1mm to 35mm with an LCST material because Langley et al. suggest a wide range of particle sizes that are encompassed by the broad range recited by the instant claims. See col.7, ln.8.

9. Claims 1-3, 5-18, 21 and 23-35 are rejected under 35 U.S.C. 103(a) as obvious over Van Vilsteren et al. (US 6,290,988).

Van Vilsteren et al. teach an encapsulated material wherein at least a part of the material is kept encapsulated during heat treatment in an aqueous environment and is released during cooling after a heat treatment. The material is encapsulated in a layer of a hydrophobic film-forming material and a layer of a material having a low critical solution temperature (LCST) below the treatment temperature. The layer containing the

hydrophobic material may be situated inside the layer having the LCST and have a melting point below the LCST, but it may also be situated outside the layer having the LCST and have a melting point above the LCST of said layer. Said layers may also be applied together. See abstract.

Van Vilsteren et al. teach that the LCST is between ambient temperature and the treatment temperature, for example between 30 and 100.degree. C. Useful materials having an LCST are, for example, alkylated and/or hydroxvialkylated polysaccharides, such as hydroxypropylmethylcellulose (HPMC), for example Celacol.RTM., ethyl(hydroxyethyl)cellulose (EHEC), hydroxypropylcellulose (HPC), methylcellulosc (MC) and mixtures thereof. Mixtures of cellulose ethers with carboxymethylcellulose (CMC) also form suitable LCST polymers. Other polymers which exhibit LCST behaviour in water and which are suitable as coating material are: polymers of mono-or di-N-alkylated acrylamides, copolymers of mono- or di-N-substituted acryl-amides with acrylates and/or acrylic acids or mixtures of interpenetrating networks of the above-mentioned (co-)polymers. Suitable furthermore are polyethylene oxide or copolymers thereof, such as ethylene oxide/propylene oxide copolymers and graft copolymers of alkylated acrylamides with polyethylene oxide. Furthermore: poly-methacrylic acid, polyvinyl alcohol and copolymers thereof, polyvinyl methyl ether, certain proteins, such as poly(VAPGVV), a repeating unit in the natural protein elastin, and certain alginates. Mixtures of said polymers with salts or surfactants can also be used as encapsulating material having an LCST. The LCST temperature can thereby be modified. The layer containing the LCST may be sprayed from an optionally heated solution or dispersion,

for example from a solution in water and/or an alcohol. The thickness and mass of said layer having the LCST is comparable with that of the optional first hydrophobic layer. The layer containing the LCST or any other layer may further contain other additives such as colorants, flavorants, fragrances, stabilisers, plasticisers, surfactants, fillers, etc. See col.2, ln.65 to col.3, ln.35.

Specifically regarding claims 16, 20, 33-34, Van Vilsteren et al. teach that the encapsulated ingredients can vary in size from 30 to 1000um up to several centimeters, e.g. for tablets. See col.4, ln.45-56.

Regarding the two phases, Van Vilsteren et al. teach that two layers should at least be present, a lower hydrophobic layer and an upper LCST layer. Such products are referred to herein as semi-solid materials, which means that they are neither thin liquids, nor complete solids, but rather high viscosity, usually aqueous emulsions, pastes, gels, creams or the like. A second hydrophobic layer may be present on top of the hydrophobic layer, in order to avoid migration before the heat treatment. These can be cosmetic products, hygiene products, household products, and especially foodstuffs. See col.4, ln.60 to col.5, ln.20. In example 1, Van Vilsteren et al. illustrate a tablet comprising an active ingredient compounded with an LSCT polymer.

Van Vilsteren et al. do not specifically teach a laundry detergent comprising an active ingredient having particle sizes between 0.1mm and 35mm as recited by the instant claims.

However, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to arrive at a detergent composition having particle sizes of

0.1mm to 35mm with an LCST material because Van Vilsteren et al. suggest a wide range of particle sizes that are encompassed by the broad range recited by the instant claims. See col.4, ln.56.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Preeti Kumar whose telephone number is 571-272-1320. The examiner can normally be reached on M-F 9:00am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yogendra N. Gupta can be reached on 571-272-1316. The fax phone

number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Preeti Kumar
Examiner
Art Unit 1751

PK

YOGENDRA N. GUPTA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700